



FEB 08 1982

DPM 5328

TECHNICAL**DATA****BULLETIN NO. 354**

TURCO PRODUCTS • A DIVISION OF PUREX CORPORATION, LTD. • WILMINGTON, CALIFORNIA 90744 • OFFICES IN ALL PRINCIPAL CITIES

November 5, 1970

TURCO® 5578*

ALKALINE CLEANER/ETCHANT FOR TITANIUM

DESCRIPTION

TURCO 5578 is a powdered alkaline compound specifically formulated for cleaning and etching titanium, columbium, tantalum, and certain refractory metals. TURCO 5578 readily moves mill soils, inks, oils and finger prints when used as directed. At higher concentrations TURCO 5578 is a very effective etchant preparatory to adhesive bonding, diffusion bonding, plating, welding, brazing, etc.

PROPERTIES

Appearance: A dry, off-white powder.

Solubility: Readily soluble in cold water.

Etch rates: At concentrations of 3 to 4 pounds per gallon at 180 - 200°F -- 0.5 to 2 mils/hour.

Solution: Exceptionally long tank life with no change in etch rate caused by dissolved metal or soil contamination.

USE INSTRUCTIONS

Equipment: Stainless steel spray or dip tanks with stainless steel heating coils. (Type 316, 321 or 347 recommended.)

Concentration: For cleaning use at 6 to 16 oz/gal depending on soil. For etching use at 3 to 4 lbs/gal.

Mixing: Add T-5578 slowly to cold water with agitation. Continue agitation until the compound is completely dissolved. (D.I. water recommended.) **CAUTION:** Heat is generated in the mixing process - use proper precautions (goggles are recommended.)

Temperature: 180 to 200°F. for cleaning and/or etching solutions.

Rinse: 160 to 180°F tap water spray rinse followed by 180°F D.I. water spray rinse. The D.I. rinse is especially important where the cleaning/etching operation is to be followed by a thermal treatment in excess of 800°F.

*Covered by one or more of the following patents: U.S. 2,843,509, 2,992,946, 2,992,997, 3,053,897, 3,080,262, 3,095,380. Other patents pending.

CONTROLS

1. Transfer exactly 10.0 ml of the bath to a 100 ml graduated cylinder.
2. Add 90 ml of water and mix well.
3. Using a pipette, transfer 50 ml of this dilution into a small flask or beaker and add 6 - 8 drops of Yellow Indicator.
4. Titrate with 1.0 N sulfuric acid until the color changes from red to yellow.
5. Calculation:
$$\text{Ml 1.0 N sulfuric acid} \times 1.63 = \text{oz/gal TURCO 5578 in bath}$$

TURCO 5578 should be used at 64 oz/gal

ADVANTAGES

The TURCO 5578 process offers the following advantages over conventional cleaning/etching methods:

1. No hydrofluoric acid is used.
2. The process will not harm the metal. Extensive testing has shown no pitting, cracking, stress corrosion or hydrogen embrittlement even under the most severe conditions.
3. The process is fast. Five minute exposure has proven more than satisfactory in almost all applications.
4. Process is easily automated. Spray or dip operations have proven equally effective.
5. The process is versatile, replacing other cleaning methods now in use, including solvent, alkaline and acid systems as well as conversion coating systems for adhesive bonding, paint or lubricant application.
6. Operating costs are low.
7. No pollution problems in use or disposal.

TOXICITY AND HAZARDS

CAUTION: TURCO 5578 contains sodium hydroxide. Avoid contact with skin, eyes, and clothing. Refer to product container label for additional precautionary and handling information.

PACKAGING

TURCO 5578 is packaged in 125# and 500# containers.

SHIPPING

The production is packed in approved I.C.C. containers and can be sent via truck, rail, air, ship, railway express, parcel post (if in a suitable container) anywhere within the Continental limits of the United States.

The above information and recommendations concerning this product are based upon our laboratory tests and field use experience, however since conditions of actual use are beyond our control, any recommendations or suggestions are made without warranty, express or implied. Manufacturer's and seller's sole obligation shall be to replace that portion of the product shown to be defective. Neither shall be liable for any loss, damage or injury, direct or consequential, arising out of the use of this product.